

REMARKS/ARGUMENTS

Claims 1-16 are pending.

An objection was raised as to claim 1. The claim has been amended per the Examiner's suggestion.

Claims 1-16 were rejected under 35 U.S.C. Section 102 for allegedly being anticipated by Yanai (U.S. Pat. No. 5,544,347).

The present invention relates to storage backup. Data in a first information processing system is backed up to a second information processing system. For example, claim 1 recites "holds the same data in duplicate in said first and second information processing systems by copying first update data generated in said first information processing system to said second information processing system." This is first aspect of the present invention..

A second aspect of the present invention relates to processing when the first information system becomes unavailable. The second information system takes over the processing that was performed by the first information system. Data that is consequently stored by the second information system is identified using difference control information. As recited in claim 1, "said second information processing system generates difference control information for identifying second update data generated in said second information processing system after taking over processing performed by said first information processing system when said first information processing system stops operating."

A third aspect of the present invention is the copying of data in the second information system back to a restored first information system based on the difference control data. Claim 1 recites "after resumption of operation of said first information processing system, said second update data is selectively copied to said first information processing system on the basis of said difference control information."

Independent claims 1, 3, 5, 7, 9, 11, 13, and 15 as originally filed recite these aspects of the present invention. The claims as originally files are patentably distinct over the cited reference to Yanai et al. for the reasons set forth below. Nonetheless, the claims have been amended to be more clear in how these aspects of the present invention are recited. For example,

the claims originally recited “possesses” difference control information, which accurately claims the invention. However, it is also accurate to recite that the second information system generates or creates or produces the difference control information. Also, the phrase “taking over and executing a process of” is more clearly stated by “taking over processing performed by”, referring the second information system taking over the function(s) of the failed first information system.

The reference to Yanai et al. teaches asynchronous and synchronous remote copy methods. As in the first aspect of the present invention, Yanai et al. teach copying of data from primary storage to secondary storage. A review of the cited Summary section reveals only the copying of data from the primary to the secondary. For example, Yanai et al. describe “the copying of the primary data to a secondary data storage system ... for providing a back-up copy of the primary data on the secondary data storage system.” *Col. 2, lines 42-47*. They describe a controller “coordinates the copying of primary data to the secondary data storage system” and “maintains at least a list of primary data which is to be copied to the secondary data storage device.” *Id at lines 57-62*. Their summary, however, does not mention either the second aspect or the third aspect of the present invention, in addition to the first aspect, as recited in each of the independent claims.

Yanai et al. do not show that difference control information is created in the second information system when the second information system takes over processing of a failed first information system. As indicated above, the summary of Yanai et al. shows only copying of data from the primary to the secondary. The summary does not disclose the creation of difference control information to track data stored by the secondary when the secondary takes over processing of the primary. *Col. 6, lines 15-50 and col. 7, line 1 to col. 8, line 43* were cited. However, a review of these cited portions of Yanai et al. do not show the combination of the first and second aspects of the present invention. The cited portions disclose additional detail about the process summarized in the summary section of Yanai et al. For example, Yanai et al. describe “the copying of data from a primary data storage system to a physically remote secondary data storage system transparent to the user, and external from any influence of the primary host which is coupled to the primary data storage system.” *Col. 6, lines 16-20*. They

discuss the technique of synchronous copy operations, which they refer to as “real-time mode.” See col. 6, lines 20-25 and lines 37-50. They discuss the technique of asynchronous copying at col. 6, lines 25-36. There is no mention of the second aspect of the present invention wherein “said second information processing system generates difference control information for identifying second update data generated in said second information processing system after taking over processing performed by said first information processing system when said first information processing system stops operating.” Yanai et al. do not teach the first and second aspects of the present invention as recited in the pending claims. For at least this reason, the Section 102 rejection of the claims is believed to be overcome.

Yanai et al. describe the use of tables for data integrity “by maintaining an index or list of various criteria including a list of data which has not been mirrored or copied.” *Col. 7, lines 23-25*. The information is kept in both the primary and the secondary. However, it is pointed out that the information pertains to whether or not data from the primary has been copied to the secondary. The recited “difference control information” and “second difference control information” relate to data created in the second information system by the second information system when the second information system has taken over for a failed first information system. Yanai et al. do not show “difference control information.” For at least this reason, the Section 102 rejection is believed to be overcome.

Yanai et al. do not teach the subsequent copying of data from the second information system to the first information system based on the difference control information upon resumption of operation of the first information system, as recited in the pending claims. As discussed above, the summary section of Yanai et al. discuss only the copying of data from the primary to the secondary. Similarly the additional cited portions of Yanai et al. disclose the details of copying data from the primary to the secondary. They do not describe an operation whereby data is copied from the second information system to the first information system based on the difference control information. Yanai et al. do not teach the first, second, and third aspects of the present invention as recited in the pending claims. For at least this reason, the Section 102 rejection is believed to be overcome.

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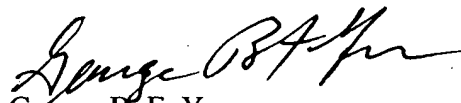
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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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